organs. Considering the larger dimensions attained by the forms living in wells, it would seem that those of the lakes, although inhabiting much larger pieces of water, are in circumstances less favourable to their development, and are, in a manner, atrophied."

XXI.—*Hermaphroditism among the Parasitic Isopoda. Reply to Mr. Moseley's Remarks on the Generative Organs of the Parasitic Isopoda.* By J. Bullar, B.A., Trinity College, Cambridge.

In the January number of this Journal Mr. Moseley attacks some statements which I had made in a paper on the Generative Organs of the Parasitic Isopoda (Journ. of Anat. and Phys., Oct. 1876). He discredits my discovery of hermaphroditism in this group, and bases his arguments mainly on the supposition that the organs which I have described as testes are, in reality, spermatophores or parts of them.

Before answering Mr. Moseley's objections, I may perhaps be permitted to supplement my previous account of the anatomy of the testes by some facts which, though they do not fully elucidate the development of the spermatozoa, are, I trust, amply sufficient to demonstrate the untenable nature of Mr. Moseley's suggestions.

The testes in these animals consist of three pear-shaped bodies, each invested by a special membrane, which is constricted to form a narrow neck before becoming continuous with the wall of the ovary. In the case of *Anilocra mediterranea*, the narrow portion is elongated to form a short duct. Each of the testes receives at its free end a special bundle of blood-vessels. The testes usually contain numerous spermatozoa, which may be seen passing down along the outer border of the ovary into the vas deferens. In some cases, however, they contain few or no spermatozoa, and are filled with a cellular blastema, from which, doubtless, the spermatozoa are developed.

The position of the testes is so invariable and their structure so uniform, that it is incredible that, had Mr. Moseley seen my preparations (which, I need hardly say, I should have been only too delighted to have shown him, and thus have saved him the trouble of writing his communication) and not merely the drawings, he could have mistaken the testes for spermatophores.

The vas deferens is a narrow duct lined by a flattened epithelium; at its lower extremity it presents an enlargement, and opens into a distinct penis situated on the ventral wall of the last thoracic segment.

The oviduct, which is always present as well as the vas deferens, is a wide tube opening externally at the side of the body, in the segment in front of that which bears the penis. There are some remarkable facts connected with the openings of the generative ducts, for which I must refer the reader to my original paper.

I have never found any spermatozoa in the oviduct, as might have been anticipated if they had been introduced from without; in the vas deferens, as I have said, they are almost always present; and it seems scarcely probable that this duct has the function (without parallel in the animal kingdom) of transporting the spermatozoa from without into the ovary.

Before passing on to Mr. Moseley's objections, it may be well to point out how closely similar in structure are the male organs of the animals I have described to those of *Asellus aquaticus*, a unisexual Isopod which has been so well described and figured by Prof. G. O. Sars (Crust. d'Eau douce).

In order to prove his point, Mr. Moseley is obliged to make the supposition that the vas deferens and penis which I have described are rudimentary. That this is not the case seems to me to be amply proved by the facts (1) that they are quite as large as those found among the unisexual forms, (2) that the vas deferens is usually filled with spermatozoa, and (3) that in a specimen in my possession the spermatozoa may be seen in the act of escaping from the orifice of the penis.

Another objection brought forward by Mr. Moseley is the difficulty he experiences in understanding why spermatophores should be formed in a self-impregnating animal. The explanation which at once suggests itself is that the formation of spermatophores is so common amongst the Crustacea, that it is highly probable that they occurred among the unisexual ancestors of the parasitic Isopods, and that a tendency to their formation was inherited by their hermaphrodite descendants. Now, unless we can show that a spermatophore is a disadvantage to a self-impregnating animal, there is no difficulty in imagining that their formation might be continued.

The last objection brought forward by Mr. Moseley, founded on the immobility of the spermatozoa, is somewhat startling. He says "the immobility of the spermatozoa observed is a fact quite as much in favour of their having been introduced for some time and tired out, as freshly developed and functionally active." Now it is well known that motile spermatozoa are of very rare occurrence among the Crustacea, being found, according to Gegenbaur ('Anatomie Comparée,' p. 426), only in the Cirripedes. It seems that Mr. Moseley, in his anxiety to disprove my results, has had recourse to an hypothesis, viz. that

these parasitic Isopoda differ from other Crustacea in having motile spermatozoa, which will be generally admitted to be more improbable than the existence of hermaphroditism in a parasitic animal.

XXII.—*Additions to the Coleopterous Fauna of Tasmania.*

By Charles O. Waterhouse.

The following Coleopterous insects have just been added to the national collection. In the collection from which they were selected were specimens of *Dorcadida biocularis*, a species, I believe, not previously recorded from this locality.

MELOLONTHIDÆ.

Telura vitticollis, Er.

The male of this species appears never to have been recorded. It differs from the female in having the eyes very prominent, the club of the antennæ is composed of five long leaflets instead of three, and the elytra are more narrowed towards the base.

HETEROMERA.

Mordella felix, sp. n.

Atra; capite thoraceque aureo-tomentosis, hoc vitta media et utrinque puncto nigris; elytris macula basali fasciisque duabus (una ante medium angulata, secunda transversa ante apicem) aureo-tomentosis; pectore abdomineque albido maculatis.
Long. $2\frac{1}{4}$ lin.

Head and thorax clothed with golden pubescence, the former with a distinct longitudinal impressed line on the vertex; thorax with a round black spot on each side, and a central longitudinal black stripe which is interrupted anteriorly; the posterior margin lobed in the middle. Scutellum golden. Elytra with a short, scarcely oblique spot joining the base near the scutellum, a well-marked fascia a little before the middle in the form of a W, and a transverse spot before the apex, all golden. Underside clothed with whitish pubescence; a triangular spot on each side of the basal abdominal segments and the two anal segments black. Palpi, two basal joints of the antennæ, anterior femora and tibiæ, and spurs to the posterior tibiæ pitchy.

Hab. Tasmania. Brit. Mus.